

Installation & Maintenance Manual

SI unit - CC-Link compatible

Type EX250-SMJ2



Safety Instructions

The unit and this manual contain essential information to protect users and others from possible injury and property damage and to ensure correct handling.

Please confirm that you fully understand the meaning of the following messages (signs) before reading the text, and always follow the instructions.

Please read the Installation & Maintenance Manual for related apparatus and understand it before operating the actuator.

IMPORTANT MESSAGES

Read this manual and follow the instructions. Signal words such as WARNING, CAUTION and NOTE, will be followed by important safety information that must be reviewed carefully.

⚠WARNING	Indicates a potentially hazardous situation which could result in death or serious injury if you do not follow instructions.
⚠CAUTION	Indicates a potentially hazardous situation which if not avoided, may result in minor injury or moderate injury.
NOTE	Provides you helpful information.

⚠WARNING

Do not disassemble, modify (including change of printed circuit board) or repair.

An injury or failure can result.

Do not operate outside of the specification range.

Fire, malfunction or damage can result.

Please use it after confirming the specification.

Do not use the product in environments with possible presence of flammable, explosive or corrosion gas.

Otherwise fire, explosion or corrosion can result.

The product is not designed to be explosion proof.

Do not apply voltages exceeding 250V between a lead wire and a metal fitting.

Pay attention to perform an insulation test because it could damage the insulation of the lead wire and cause failure.

These instructions must be followed when using the product in an interlocking circuit:

- Provide double interlocking through another system such as mechanical protection.
- Check the product regularly to ensure proper operation. Otherwise malfunction can cause an accident.

These instructions must be followed when performing maintenance work:

- Turn off the power supply
- Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance work.

Otherwise it can cause injury.

Safety Instructions (continue)

⚠CAUTION

Perform a proper functional check after completing maintenance work.

Stop operation when an abnormality is observed or the product is not working properly.

Safety cannot be assured due to unexpected malfunctions.

NOTE

The direct-current power supply should be a UL authorized power supply.

1. Limited voltage current circuit in accordance with UL508

A circuit to which power is supplied by the secondary coil of a transformer that meets the following conditions.

- Max. voltage(with no load): less than 30Vrms (42.4V peak)
- Max. current: (1)less than 8A(including when short circuited)
(2)limited by circuit protector (such as fuse) with the following ratings

No load voltage (V peak)	Max.current rating (A)
0 to 20 [V]	5.0
20 to 30 [V]	100 / peak voltage

- 2. UL1310 compatible class 2 power supply unit or circuit of max. 30Vrms (42.4V peak) or less using a UL1585 compatible class 2 transformer as power supply. (Class 2 circuit)

Follow the instructions given below when handling the product. Failure to follow instructions may damage the unit.

- Operate the product within the specified voltage range.
- Reserve a space around the unit for maintenance.
- Do not remove labels.
- Do not drop, hit or apply excessive shock to the product.
- Do not bend or apply tensile force to cables, or apply a force by placing a heavy load on them.

- Connect wires and cables correctly.
- Do not connect wires while the power is on.
- Do not lay wires or cables with the same wiring route as a power line or high-voltage line.
- Verify the insulation of the wiring.
- Take proper measures against noise such as a noise filter when the product is incorporated in equipment or devices.
- Select an operation environment according to enclosure(IP67).
- Take sufficient shielding measures when installing the product at the following place.
 - (1)A place where a noise due to static electricity etc. is generated
 - (2)A place of high electric field strength
 - (3)A place possibly exposed to radioactivity
 - (4)A place near power cable
- Do not use the product nearby a place where an electric surge is generated.
- Use the product equipped with a surge absorber when a surge-generating load such as a solenoid valve is driven directly.
- Prevent foreign matter such as remnant of wires from entering the product.
- Do not expose the product to vibration and impact.
- Keep the specified ambient temperature range (+5 to +45 °C).
- Do not expose the product to heat radiation from a heat source located nearby.
- Use a precision screw driver with small flat blade when setting rotary switch and DIP switch.
- Perform maintenance and check at regular intervals.
- Perform a proper functional check.
- Do not clean the product with chemicals such as benzene and thinner.

Specification

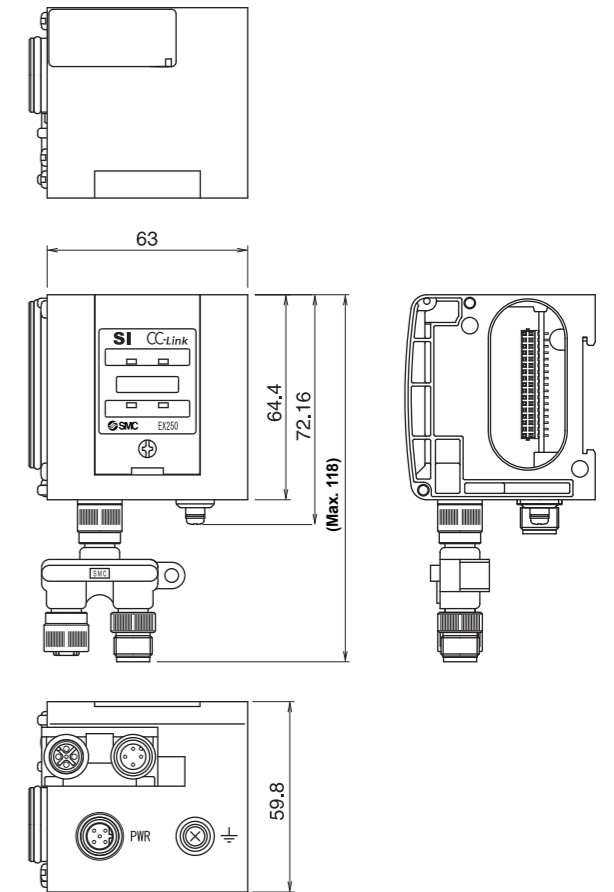
General specification

Item	Specification
Operating ambient temp.	+5 to +45 °C
Operating ambient humidity	35 to 85% RH (No dew condensation)
Storage ambient temp.	-20 to +60 °C
Vibration proof	10 to 57Hz 0.35mm (Constant amplitude) 57 to 150Hz 50m/s ² (Constant acceleration)
Impact proof	150m/s ² (peak), 11ms × three times in each direction ± X, Y and Z
Noise immunity	Normal mode : ±1500V Pulse duration 1us Common mode : ±1500V Pulse duration 1us Radiation : ±1000V Pulse duration 1us
Withstand voltage	500V AC for 1min.
Insulation resistance	500V DC min10M ohm
Operating environment	No corrosive gas and no dust

Electrical and network

Item	Specification	
Power voltage range Current consumption	Power for SI/Input Block Current consumption	19.2 to 28.8V DC Max. 1.1A or less Depending on the number of Input Block stations and sensor specifications
	Power for solenoid valve Current consumption	22.8 to 26.4V DC Max 2.0A or less Depending on the number of solenoid valve stations and specifications
Solenoid valve connection spec.	Output type	N-ch MOS-FET Open drain type
	Connection load	Solenoid valve with protection circuit for 24V DC and 1.5W or less surge voltage (made by SMC)
	Insulation type	Opto coupler type
Solenoid valve connection spec.	Residual voltage	0.3V DC or less
	station No. assignment range	1 to 63 (assigned by the rotary switch)
	Baud rate setting range	156kbps, 625kbps, 2.5Mbps, 5Mbps, 10Mbps, (Assigned by the rotary switch)
	Applicable system	CC-Link Ver.1.10
	Occupied station	2 stations
	Station type	Remote device station
I/O points	Input/32 points Output/32 points	

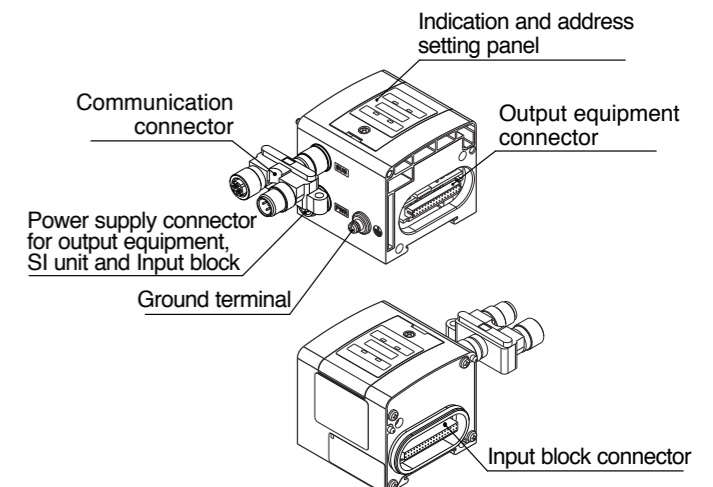
Outline with Dimensions (in mm)



Names and Functions of Individual Parts

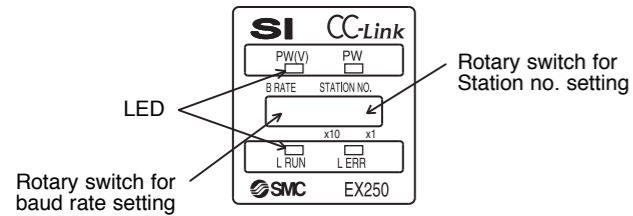
Body

- Communication connector
To send and receive communication signals through CC-Link line.
- Power supply connector for output equipment, SI unit and Input block
To supply power to the output equipment such as a solenoid valve, and output block, SI unit and Input block.
- Output equipment connector
To connect the output equipment such as a solenoid valve and output block.
- Input block connector
To connect the Input block.
- Indication and address setting panel
To provide LED's to indicate the condition of the unit and the address setting.
- Ground terminal
To be connected to the ground.



Names and Functions of Individual Parts. (continue)

LED indication



Indication	Contents
PW	Light ON : Input and control power is ON. Light OFF: Input and control power is OFF.
PW (V)	Light ON : When power supply for solenoid valves is turned on. Light OFF : When supply voltage decreases below 19V.
L RUN	Light ON : Communication is normal. Light OFF: Communication terminated. (Time over error)
L ERR	Light ON : Communication error. Flashing : Assignment of station no. and baud rate are made during communication .(Flashing every 0.4 s) Light OFF: Communication is normal.

"PW", "PW(V)", "L RUN" light while data link is normal.

SW Setting

SW Setting

The Station No. and Baud rate are set by the rotary switch inside of the SI unit cover.

Set parameters while the power of SI unit is off.

Station No. Setting

Setting	Setting range
× 10	0 to 6
× 1	0 to 9

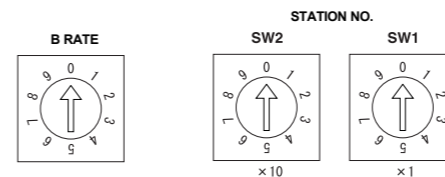
*: Set stations within 01 to 63.
"L ERR" display lights if 00 and station 64 or larger is selected.
Turn off the power and select correct station.
*: "L ERR" display blinks if the switch is operated when the power is on.

Baud rate Setting

Setting	Baud rate
0	156 kpbs
1	625 kpbs
2	2.5 Mbps
3	5 Mbps
4	10 Mbps

*: Set baud rate within 0 to 4.
"L ERR" display lights if the setting is out of 0 to 4.
Set correct value after cutting the power supply.
*: "L ERR" display blinks if the switch is operated when the power is on.
*: Select baud rate the same as master station.

Adjustment when shipped



Please refer the table below for setting at the time of shipment from the factory.

Set parameters	Setting of rotary switch	contents
B RATE(baud rate)	0	156kbps
STATION NO.	× 10	0
	× 1	0

Wiring

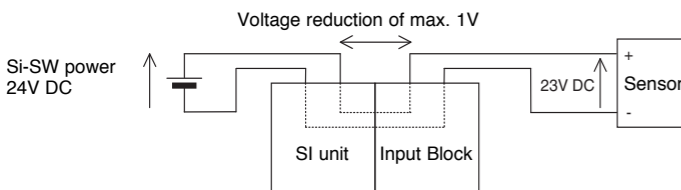
Wiring power supply

The Power supply connection inside the unit has individual supplies for solenoid valve actuation (SV power supply) and for Control parts and Sensor (SI • SW power supply). Supply 24V DC for each of them.

Power for a sensor is supplied to the sensor connected to an input Block.

There will be a voltage drop of up to approx. 1V inside the SI unit, therefore select a sensor which will operate with the resultant voltage.

If sensor requires 24V, it is necessary to lower power supply voltage for sensor slightly or secure a power supply for sensor separately without going through the SI unit so that sensor input voltage can be 24V with actual loading (allowable voltage of power supply : 19.2V to 28.8 V).

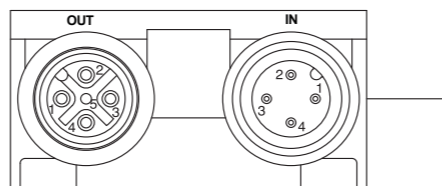


Communication connector (Bus adapter)

IN : M12 4pins(male)

OUT : M12 5pins (female)

Example of connected cable : CORRENS VA-4DSB*CCG etc.



IN side

Pin No.	Description	Function
1	SLD	Shield
2	DB	Communication wire DB
3	DG	Communication wire DG
4	DA	Communication wire DA

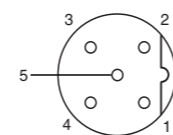
OUT side

Pin No.	Description	Function
1	SLD	Shield
2	DB	Communication wire DB
3	DG	Communication wire DG
4	DA	Communication wire DA
5	-	Unused

Power supply connector

M12 5pins reverse (male)

Example of connected cable : P5032-66-* etc.



Pin No.	Description	Function
1	SV24V	+24V for solenoid valve
2	SV0V	0V for solenoid valve
3	SW24V	+24V for SI unit and Input Block
4	SW0V	0V for SI unit and Input Block
5	E	Earth

Contact

AUSTRIA	(43) 2262 62280	NETHERLANDS	(31) 20 531 8888
BELGIUM	(32) 3 355 1464	NORWAY	(47) 67 12 90 20
CZECH REP.	(420) 541 424 611	POLAND	(48) 22 211 9600
DENMARK	(45) 7025 2900	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	SLOVAKIA	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	SLOVENIA	(386) 73 885 412
GERMANY	(49) 6103 4020	SPAIN	(34) 945 184 100
GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
HUNGARY	(36) 23 511 390	SWITZERLAND	(41) 52 396 3131
IRELAND	(353) 1 403 9000	UNITED KINGDOM	(44) 1908 563888
ITALY	(39) 02 92711		

SMC Corporation

URL <http://www.smcworld.com> (Global) <http://www.smceu.com> (Europe)

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